Development/Demonstration of Methodology to Assess Value of DER

Contract #: 500-01-039
Contractor: New Power Technologies
Subcontractors: Optimal Technologies: Cupertino Electric: William Stephenson, Consulting Engineer: Rita Norton and Associates: Silicon Valley Manufacturing Group: Roy Skinner, Consulting Environmental Engineer
Contract Amount: $616,689
Match Amount: $145,166
Contractor Project Manager: Peter Evans (650) 948-4546
Commission Contract Manager: Linda Kelly (916) 654-4815
Status: Completed

Project Description:
The purpose of the project is to demonstrate an analytical methodology that can identify where distributed energy resources can provide specific transmission and distribution (T&D) network benefits. This methodology will evaluate multiple aspects of network performance including factors affecting stability and power quality in addition to T&D losses. The project will create a detailed and integrated dataset of a utility network that integrates both transmission
and distribution.

Once this dataset is accomplished, the project will introduce dispatched loadsheds and embedded generation to see where these additions optimize or improve system performance. This will be achieved through the use of load flow tools traditionally used only for transmission networks, along with new non-linear optimization technologies that simultaneously consider multiple factors and provide repeatable results analyzing systems with large numbers of elements, as is the case with distribution systems. When these locations have been identified and ranked, a portfolio of specific types of DER projects having specific technical and operational attributes that can measurably improve the performance of the utility system will be identified in both engineering and economic terms.

This project will also provide a financial analysis that will allow comparison of these nonwire options (e.g. DER) to wire options (e.g. expanded T&D lines). Additionally, a set of financial and non-financial incentives to facilitate the development of the projects or programs in the portfolio will be developed.

This project supports the PIER Program objectives of:

- Improving the reliability/quality of California's electricity system by developing an analytical tool that can identify where DER and other nonwire alternatives can be located to help alleviate power quality and T&D capacity and congestion problems in the State.
- Providing more choices to California consumers by helping overcome the barriers to the deployment of distributed generation.

Proposed Outcomes:

1. Demonstrate an analytical methodology that can identify where distributed energy resources can provide specific T&D network benefits.
2. Create a detailed and integrated dataset of a utility network that integrates both transmission and distribution.

Project Status:
The project Kick-off Meeting was held on September 30, 2002. This project's technical work is completed. The Final Meeting will be held in February of 2005 and the Final Report is expected to be available in March 2005. For the final report, please right click on
www.energy.ca.gov/pier/final_project_reports/CEC-500-2005-096.html